

KEY et al  
Appl. No. 10/528,387  
January 21, 2009

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**REMARKS/ARGUMENTS**

Reconsideration of this application is requested. Claims 1-9 and 11-16 are in the case.

**I. THE PRIOR ART REJECTION**

Claims 1-9 and 11-16 stand rejected under 35 U.S.C. §102(b) as allegedly anticipated by Sunley *et al.*, Catalysis Today 58 (2000) 293-307 (Sunley). The rejection is respectfully traversed.

The present invention relates to a process for the production of acetic acid by carbonylating methanol and/or a reactive derivative thereof selected from methyl acetate, dimethyl ether and methyl iodide, with CO. The carbonylation is carried out in the presence of an iridium catalyst, a ruthenium, osmium or rhenium promoter, and a catalyst stabilizer selected from indium, cadmium, mercury, gallium or zinc, wherein the iridium:promoter:stabilizer molar ratio is maintained in the range 1:( $>2$  to 15):(0.25 to 12).

Sunley does not anticipate the claimed process. Sunley describes the use of promoters to enhance the performance of the iridium catalyst in the Cativa process for the production of acetic acid. According to Sunley, the promoters fall into two distinct groups: simple iodide complexes of zinc, cadmium, mercury, gallium and indium; and carbonyl complexes of tungsten, rhenium, ruthenium and osmium (Sunley, page 299, col. 2, 3rd paragraph). Sunley further states that combinations of promoters from these distinct groups may be employed (Sunley, page 299, col. 2, last line-page 200, col. 1, 1<sup>st</sup> line).

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However, as acknowledged on page 5 of the Official Action, the present invention differs from Sunley in that Sunley does not disclose a catalyst system comprising In, Cd, Hg, Ga or Zn, in addition to an Ir-catalyst and a Ru/Os/Re-promoter wherein the molar ratio of Ru:Ir is greater than 2:1. In fact, in the Experiments which do employ such a combination the molar ratio of Ru:Ir is 1:1 [Experiments 13 and 14, Table 2].

Thus, the presently claimed invention is not anticipated by Sunley. Withdrawal of the anticipation rejection is respectfully requested.

The Examiner also states that, in view of Sunley, it would have been obvious to the skilled artisan to increase the molar ratio of promoter to iridium so as to improve the carbonylation rate. This is not correct.

The present invention is concerned with a problem that occurs at high promoter to iridium molar ratios, i.e. ratios of greater than 2:1. It is known from the Applicant's commercial experience that in the iridium catalyzed, Ru/Os/Re-promoted carbonylation of methanol or reactive derivative thereof, where a high molar ratio of promoter to iridium is employed, there is an increased tendency for precipitation of the catalyst system to occur (page 1, lines 16-20). Precipitation of the catalyst system in such processes is disadvantageous, not least because it results in the loss of expensive catalyst and promoter metals.

Sunley, on the other hand, is not concerned with the problem of catalyst system precipitation in Ir-catalyzed, Ru/Os/Rh- promoted carbonylation processes, wherein high molar ratios of Ir:Ru/Os/Rh are employed. In fact, in the catalyst stability test reported in Sunley, there is stated to have been "a total absence of any precipitates" (Sunley, page 305, col. 1, last paragraph to col. 2, first paragraph).

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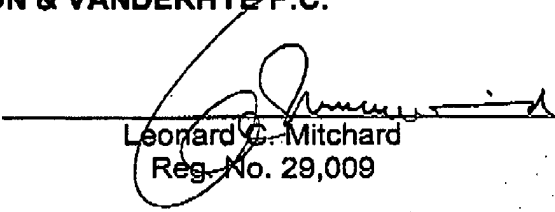
Thus, when looking to solve the problem of precipitation at molar ratios of Ru:Ir of greater than 2:1 in iridium-catalyzed, ruthenium-promoted carbonylation processes, the person of ordinary skill would not have consulted Sunley, since Sunley does recognize that catalyst precipitation can be a problem at such high ratios. Furthermore, even if the skilled person did consult Sunley (it is believed that that would not have occurred), Sunley contains no suggestion of a solution to the problem of preventing catalyst precipitation. Sunley clearly does not give rise to a *prima facie* case of obviousness of the presently claimed invention.

Favorable action is awaited.

Respectfully submitted,

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